

REMARKS

This responds to the Office Action mailed on June 2, 2005.

Claim 16 is amended, no claims are canceled, and claims 30-41 are added; as a result, claims 1-18 and 30-41 are now pending in this application. Newly added claims 30 and 41 are fully supported in Applicants patent specification.

§112 Rejection of the Claims

The Office Action rejected claims 1-15 under 35 USC § 112, first paragraph, as failing to comply with the written description requirement. The Office Action stated: “The claim(s) contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specific claim elements cited in support of the rejection were “a buffer layer formed above a surface of the heat spreader” and “an array of carbon nanotubes formed above the buffer layer.” The Office Action also stated: “Applicant does not disclose (figures 1 and 2) that both buffer layers (26, 30) are formed above a surface of the heat spreader (16). It appears that the buffers are either formed on the surface of a die or on the lower surface of the heat spreader¹”

Applicant respectfully traverses the rejection. The first claim feature cited, from claim 1, is supported in Applicant’s patent specification.² Applicant submits that it is not necessary to refer to the “lower” surface of the heat spreader in claim 1 to bring the claim into conformance with Applicant’s disclosure. Applicant’s claim 1 recites the buffer layer as being “above a surface” of the heat spreader. That relative relationship is maintained, Applicants submit, even if the assembly in Fig. 1, for example, were inverted, layer 26 would be “above” the lower surface of spreader plate 17 of heat spreader 16 and between the heat spreader and the thermal interface material. Reconsideration and allowance of claim 1 is respectfully requested.

Applicants note the reference in the Office Action to “an array of carbon nanotubes formed above the buffer layer” and assume that the quote relating to this feature refers to claim

¹ Final Office Action of June 3, 2005, page 2.

² Patent specification, page 3, lines 4-9.

13. Again, the claim feature is supported in Applicants' patent specification at the same place as the other cited feature. Again, the reference in the claim to the array of nanotubes as "formed above the buffer layer" is a relational term referring to a surface of the heat spreader, and the positioning of the buffer layer "above it." The claim further locates the buffer layer as "interposed between a die and the heat spreader." The claimed structure is entirely consistent with the disclosure in Applicants patent specification. Applicants do not believe that it is necessary to specify "upper" and "lower" when referring to surfaces of the heat spreader when the claim is understandable and supported by Applicants specification as the claim is currently drafted.

Applicants note that the explanation above as to the propriety of the "above" language of claims 1 and 13 also resolves the objections to the specification and drawings stated in the Final rejection, for the same reasons.

Reconsideration and allowance of claims 1 and 13 and their respective dependent claims 2-12 and 14-15 is respectfully requested.

§102 Rejection of the Claims

Claims 16-18 were rejected under 35 USC § 102(e) as being anticipated by Dubin (U.S. 2004/0265489 A1).

Applicants have amended claim 16 so that it calls for a buffer layer coupled to the array of carbon nanotubes and the heat sink and is clearly distinguished from what is shown in the cited Dubin publication. Reconsideration and allowance of amended claim 16 and its dependent claims 17 and 18 is respectfully requested.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6970 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

YUEGANG ZHANG ET AL.

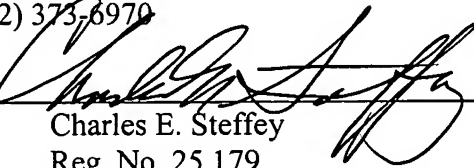
By their Representatives,

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October 3, 2005

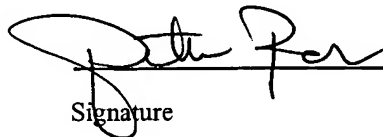
By


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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 3 day of October, 2005.

Peter DeBuffoni

Name


Signature

IN THE DRAWINGS (See Pages 2-3 of OA)

The drawings were objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "24", "25" and "26" have both been used to designate carbon nanotubes.

Corrected drawings are supplied herewith, each identified as "REPLACEMENT SHEET" of the drawings.